

## **Appendix M**

### **Long-Term Impacts Associated with Discontinuing Disposal of HSW at the Hanford Site**

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# Long-Term Impacts Associated with Discontinuing Disposal of HSW at the Hanford Site

### M.1 Introduction

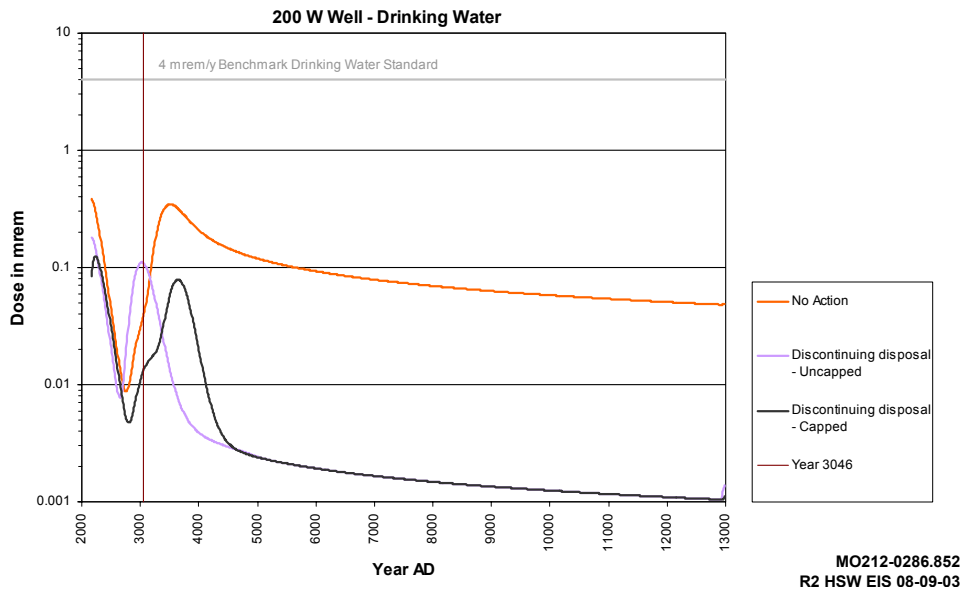
Consideration was given to a scenario of discontinuing disposal of Hanford solid waste (HSW) at Hanford. This would differ from the No Action Alternative evaluated in this *Hanford Solid (Radioactive and Hazardous) Waste Program Environmental Impact Statement* (HSW EIS) in that no future wastes from Hanford or offsite generators would be accepted for disposal under the HSW program after 2007, the point at which the existing disposal capacity is projected to be used. The long-term environmental impacts (extracted from Section 5.3 and Appendix G) of the following waste types were analyzed:

- Pre-1970 through 1995 low-level waste (LLW) in the Low Level Burial Grounds (LLBGs)
- Category (Cat) 1 and Cat 3 LLW disposed of in the period 1996-2007
- Mixed LLW (MLLW) for the period 1996–2007 that could be disposed of in Trenches 31 and 34 in the 200 West Area with any remaining MLLW stored in the Central Waste Complex (CWC).

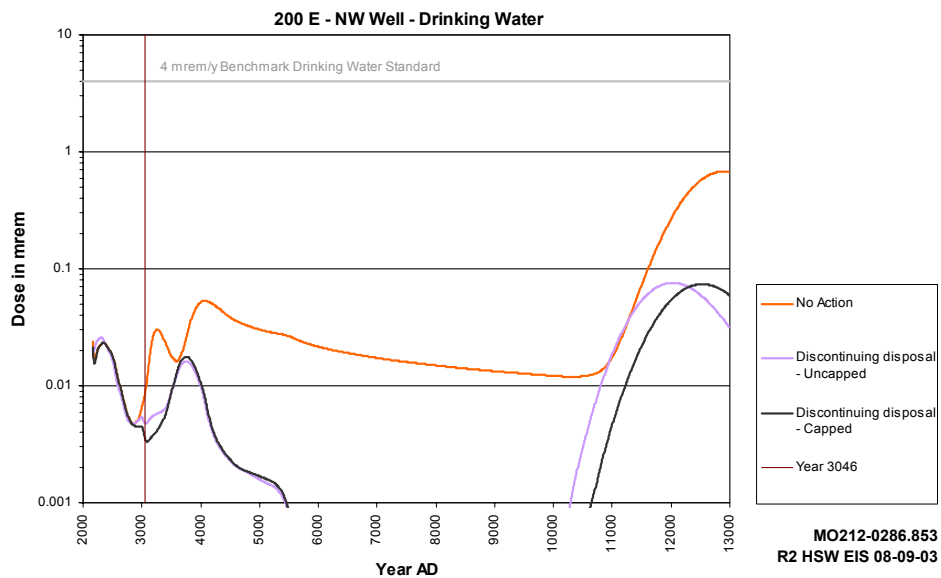
These waste categories include all waste disposed of in the LLBGs through 2007.

### M.2 Impacts on Groundwater

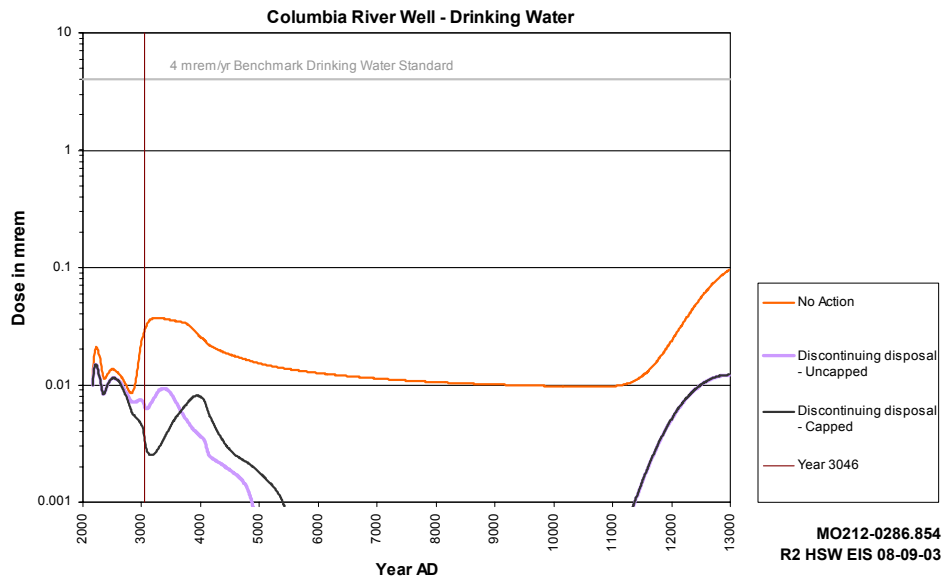
Impacts on groundwater are presented in terms of annual dose to an individual drinking 2 liters of water per day from hypothetical wells located downgradient from the existing waste disposal facilities. The doses, as a function of time for 10,000 years after site closure, are presented in Figures M.1 through M.3 for the well 1 km downgradient from the 200 West Area LLBGs, the northwest well 1 km from the 200 East Area LLBGs, and the near-river well. Dose plots are presented for both capped and uncapped LLBGs (MLLW trenches 31 and 34 are capped in both cases). The plot for the No Action Alternative as provided in Section 3.4 is also shown.



**Figure M.1.** Hypothetical Annual Dose from Drinking Water Containing Maximum Combined Concentrations of Radionuclides in Groundwater at 1 km Downgradient from the 200 West Area as a Function of Calendar Year



**Figure M.2.** Hypothetical Annual Dose from Drinking Water Containing Maximum Combined Concentrations of Radionuclides in Groundwater 1 km Downgradient Northwest of the 200 East Area as a Function of Calendar Year

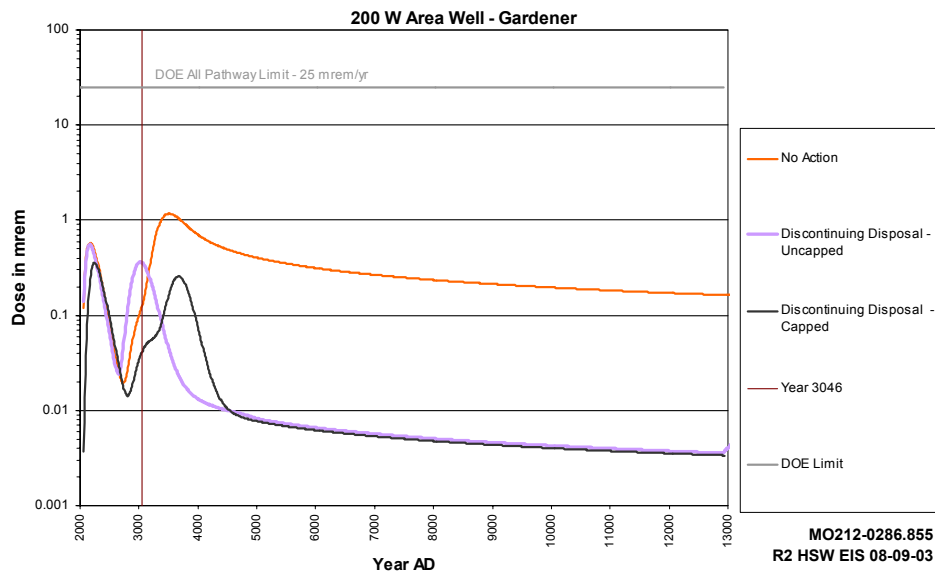


**Figure M.3.** Hypothetical Annual Dose from Drinking Water Containing Maximum Combined Concentrations of Radionuclides in Groundwater Near the Columbia River as a Function of Calendar Year

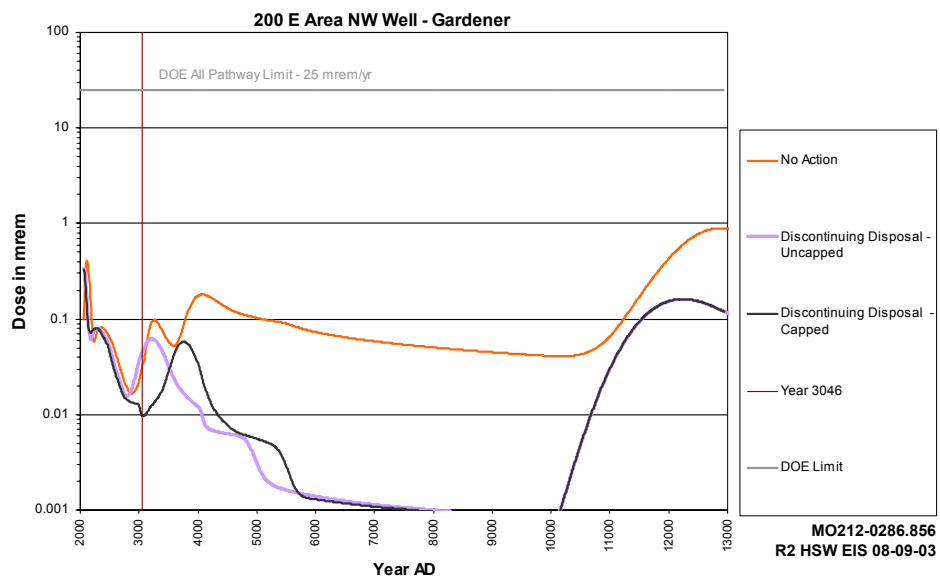
As would be expected, the plots for discontinuing disposal show lower doses over most of the period of analysis than do the plots for the No Action Alternative. However, the doses are essentially the same in the earlier part of the period of analysis, as the additional inventories of HSW do not contribute. It may also be noted that capping the wastes provides for only a minimal reduction in doses; however, the presence of barriers shifts the arrival of contaminants and, consequently, the doses by roughly 600 years.

Impacts on groundwater are also presented in terms of annual dose to the hypothetical resident gardener as a function of time in Figures M.4 through M.6, and to the hypothetical resident gardener with a sauna or sweat lodge scenario in Figures M.7 through M.9.

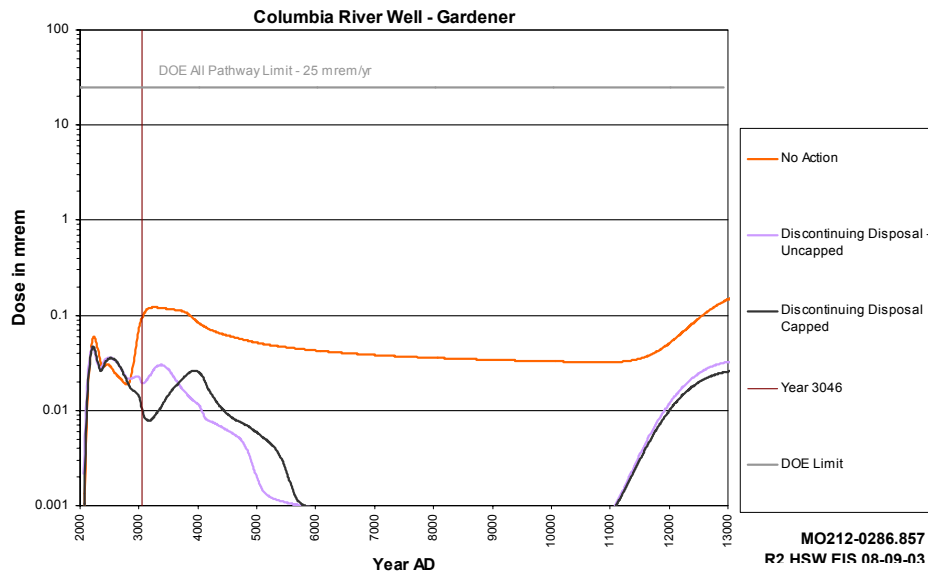
Impacts on groundwater in terms of annual dose to the hypothetical resident gardener are higher than those in terms of drinking water dose, but, in general, follow the same pattern. Again, the pattern is similar in terms of the hypothetical resident gardener with sauna or sweat lodge, but the doses are larger due to the inhalation pathway.



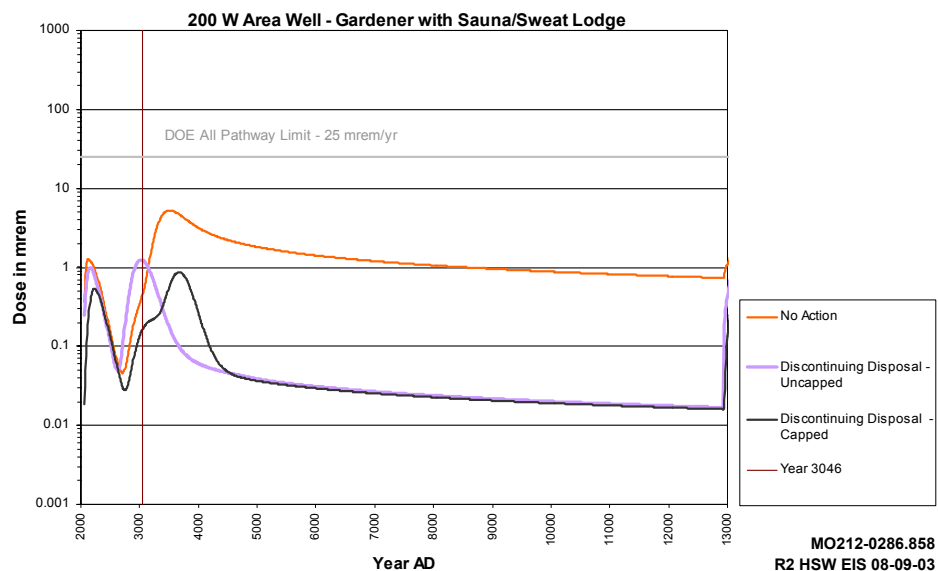
**Figure M.4.** Annual Dose to a Hypothetical Resident Gardener at Various Times over 10,000 Years Using Water from a Well 1 km Downgradient from 200 West Area



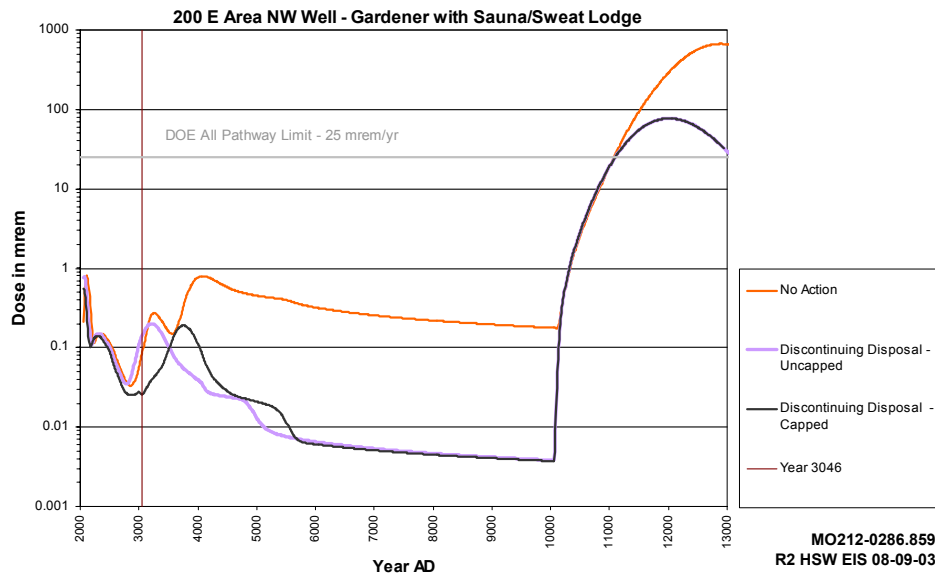
**Figure M.5.** Annual Dose to a Hypothetical Resident Gardener at Various Times over 10,000 Years Using Water from a Well 1 km Downgradient Northwest of the 200 East Area



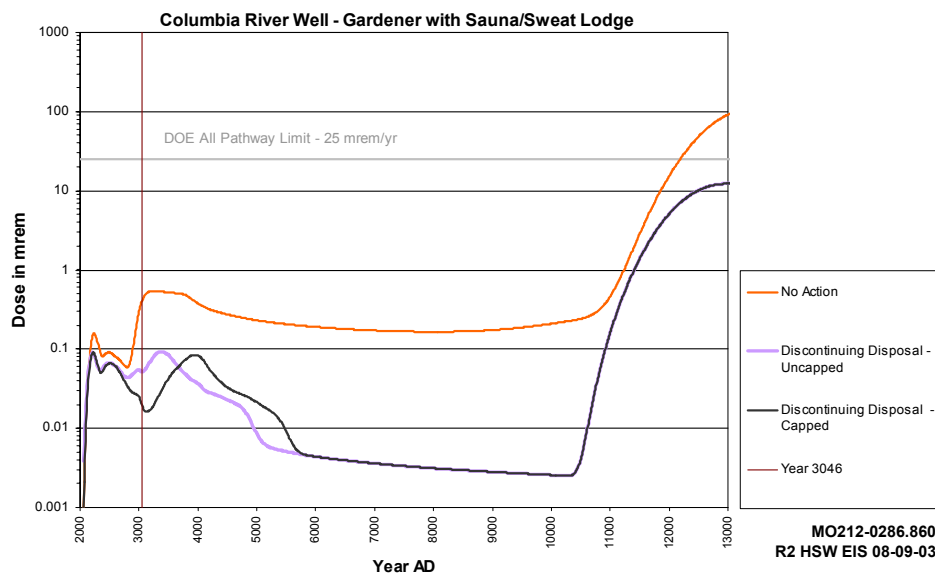
**Figure M.6.** Annual Dose to a Hypothetical Resident Gardener at Various Times over 10,000 Years Using Water from a Well Adjacent to the Columbia River



**Figure M.7.** Annual Dose to a Hypothetical Resident Gardener with a Sauna/Sweat Lodge Scenario at Various Times over 10,000 Years Using Water from a Well 1 km Downgradient from the 200 West Area



**Figure M.8** Annual Dose to a Hypothetical Resident Gardener with a Sauna/Sweat Lodge Scenario at Various Times over 10,000 Years Using Water from a Well 1 km Downgradient Northwest from the 200 East Area



**Figure M.9.** Annual Dose to a Hypothetical Resident Gardener with a Sauna/Sweat Lodge Scenario at Various Times over 10,000 Years Using Water from a Well Adjacent to the Columbia River